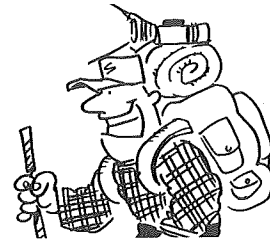


# Why Did the Backpacker Carry a Flashlight?



Write the exercise letter in the box containing the number of the answer.

Find the greatest common factor.

**E**  $10x + 35$

**O**  $4x^2 - 15x$

**A**  $20x^2 + 36x$

**H**  $11x^3 - 2x^2$

**T**  $24x^3 - 64x^2 + 40x$

**S**  $60x^4 + 70x^3 - 10x^2$

answers **21**  $5x^3$

**28**  $4x$

**7**  $8x$

**19**  $5$

**3**  $2x^2$

**24**  $10x^2$

**12**  $x$

**17**  $x^2$

Find the greatest common factor.

**D**  $10a^2b + 16ab^2$

**E**  $11a^3b - 2a^2b^4$

**H**  $36a^4 + 27a^3b$

**A**  $3a^2b^2 + 18ab^3 - 33b^4$

**I**  $4a^4b^2 - 9a^3b^3 + a^2b^4$

**N**  $75a^5b^3 + 30a^3b^5 - 60ab^7$

answers **2**  $a^2b$

**5**  $3b^2$

**27**  $a^4b$

**20**  $15ab^3$

**22**  $9a^3$

**9**  $2ab$

**15**  $a^2b^2$

**4**  $5ab^2$

Simplify the expression.

**O**  $\frac{8t + 12}{4}$

**T**  $\frac{2t^2 - 9t}{t}$

**E**  $\frac{15t^2 + 20t}{5t}$

**I**  $\frac{6t^3 - 11t^2}{t^2}$

**H**  $\frac{4t^3 + 18t^2 - 10t}{2t}$

**L**  $\frac{-9t^4 - 60t^3 + 3t^2}{-3t^2}$

Simplify the expression.

**W**  $\frac{8a^2b + 3ab^2}{ab}$

**D**  $\frac{12ab^2 - 40a^2b}{4ab}$

**G**  $\frac{7a^5b^4 + 49a^4b^5}{7a^2b}$

**N**  $\frac{-10a^3b + 30ab^3}{-2ab}$

**L**  $\frac{18a^7b^5 + 45a^5b^3 + 9a^3b}{9a^3b}$

**T**  $\frac{15a^4b^4 - 3a^4b^5 - 6a^3b^6}{3a^2b^3}$

answers **23**  $6t - 11$

**14**  $3t^2 + 20t - 1$

**10**  $3t - 11$

**11**  $2t - 9$

**27**  $2t + 3$

**25**  $3t^2 - 10t - 1$

**8**  $3t + 4$

**1**  $2t^2 + 9t - 5$

answers **16**  $a^3b^3 + 7a^2b^4$

**18**  $5a^2b - a^2b^2 - 2ab^3$

**4**  $8a + 3b$

**21**  $2a^4b^2 + 5ab^2 + 1$

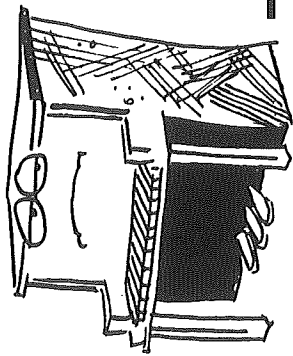
**6**  $5a^2 - 15b^2$

**26**  $2a^4b^4 + 5a^2b^2 + 1$

**29**  $3b - 10a$

**13**  $5a^2b - 2a^2b^4 + ab^3$

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29



# Why Didn't the Piano Work?

Factor the expression. Find a factor in each of the two answer columns. One factor will have a letter and the other a number. Write the letter in the matching numbered box at the bottom of the page.

## Set 1

a.  $x^2 - 6x$

b.  $2x^2 + 8x$

c.  $45x^2 - 20x$

d.  $9x^3 + 30x$

e.  $8x^5 - 15x^3$

## Set 1 Answers

ii.  $x^3$  T.  $(3x^2 + 10)$

6.  $2x^2$  O.  $(x - 6)$

24.  $2x$  V.  $(8x^2 + 15x)$

2.  $3x$  S.  $(9x - 4)$

16.  $x$  F.  $(3x^2 - 4)$

14.  $x^2$  N.  $(8x^2 - 15)$

8.  $5x$  A.  $(x + 4)$

## Set 3

a.  $m^3n + 9m^2n$

b.  $10m^3n^2 - 25m^2n^3$

c.  $49m^5n^3 + 28mn^4$

d.  $72m^7n + 24n$

e.  $8m^3n^4 - 22m^5n^6$

## Set 3 Answers

10.  $5m^2n^2$  L.  $(4 - 11m^2n^2)$

7.  $24n$  P.  $(7m^4 + 4n)$

18.  $7mn^4$  S.  $(2m - 5mn^2)$

i.  $m^2n$  W.  $(3m^7 + 1)$

12.  $2m^3n^4$  I.  $(m + 9)$

22.  $7mn^3$  L.  $(4 - 11mn^3)$

5.  $8mn$  O.  $(2m - 5n)$

## Set 2

a.  $8a^3 + 4a^2 + 12a$

b.  $7a^4 - 35a^3 - 14a^2$

c.  $6a^8 + 10a^6 - 3a^4$

d.  $36a^3 - 24a^4 + 60a^5$

e.  $30a^6 - 75a^5 - 15a$

## Set 2 Answers

7.  $2a^2$  Y.  $(a^2 - 5a - 2)$

6.  $a^4$  P.  $(2a^5 - 5a^4 - 3)$

15.  $15a$  T.  $(3 - 2a + 5a^2)$

13.  $7a^2$  K.  $(2a^2 + a + 3)$

9.  $3a^2$  H.  $(2a^5 - 5a^4 - 1)$

4.  $4a$  O.  $(6a^4 + 10a^2 - 3)$

19.  $12a^3$  N.  $(3 - 2a - 5a^3)$

## Set 4

a.  $40x^2 - 100xy - 80y^2$

b.  $12x^5y^2 + 9x^4y^2 - 6x^3y^2$

c.  $15x^3y - 35x^2y^2 + 40xy^3$

d.  $144x^8y^2 + 27x^4y + 9x^2$

e.  $2\pi x^2 - \pi y^2$

## Set 4 Answers

17.  $5xy$  R.  $(4x^2 + 3x - 6y)$

21.  $3x^2y$  N.  $(16x^6y^2 + 3x^2y + 1)$

5.  $9x^2$  O.  $(2x^2 - 5xy - 4y^2)$

3.  $5x^2$  Y.  $(4x^2 + 3x - 2)$

25.  $3x^3y^2$  L.  $(2x^2 - y^2)$

23.  $\pi$  S.  $(3x^2 - 7xy - 4y^2)$

20.  $20$  W.  $(3x^2 - 7xy + 8y^2)$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
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Factoring By Grouping

Factor each completely.

Name \_\_\_\_\_  
Date \_\_\_\_\_ Period \_\_\_\_\_

1)  $8r^3 - 64r^2 + r - 8$

2)  $12p^3 - 21p^2 + 28p - 49$

3)  $12x^3 + 2x^2 - 30x - 5$

4)  $6v^3 - 16v^2 + 21v - 56$

5)  $63n^3 + 54n^2 - 105n - 90$

6)  $21k^3 - 84k^2 + 15k - 60$

7)  $25v^3 + 5v^2 + 30v + 6$

8)  $105n^3 + 175n^2 - 75n - 125$

9)  $96n^3 - 84n^2 + 112n - 98$

10)  $28v^3 + 16v^2 - 21v - 12$

11)  $4v^3 - 12v^2 - 5v + 15$

12)  $49x^3 - 35x^2 + 56x - 40$

13)  $24p^3 + 15p^2 - 56p - 35$

14)  $24r^3 - 64r^2 - 21r + 56$

15)  $56xv + 49xk^2 - 24yw - 21yk^2$

16)  $42mc + 36md - 7r^2c - 6r^2d$

17)  $12x^2u + 3x^2v + 28yu + 7yv$

18)  $40ac^2 + 25ad^2 + 32bc^2 + 20bd^2$

19)  $12bc - 4bd - 15xc + 5xd$

20)  $16mn - 4m^2 + 28n - 7m$

21)  $56xy - 35x + 16y - 10r$

22)  $21xy + 15x + 35y + 25r$

23)  $5a^2z - 4a^2c + 15xz - 12xc$

24)  $4xy + 6 - x - 24y$

25)  $21xy - 12b^2 + 14xb - 18by$

26)  $9mz - 4nc + 3mc - 12nz$

27)  $28xy + 25 + 35x + 20y$

28)  $30uv + 30u + 36u^2 + 25v$

